

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES  
CENTRAL REGION

ELLSWORTH FLATS

ROAD PLAN

SECTION 5, 6, TOWNSHIP 13 NORTH, RANGE 08 WEST, W.M.  
PACIFIC COUNTY

PACIFIC DISTRICT

AGREEMENT NO.: 30-074599

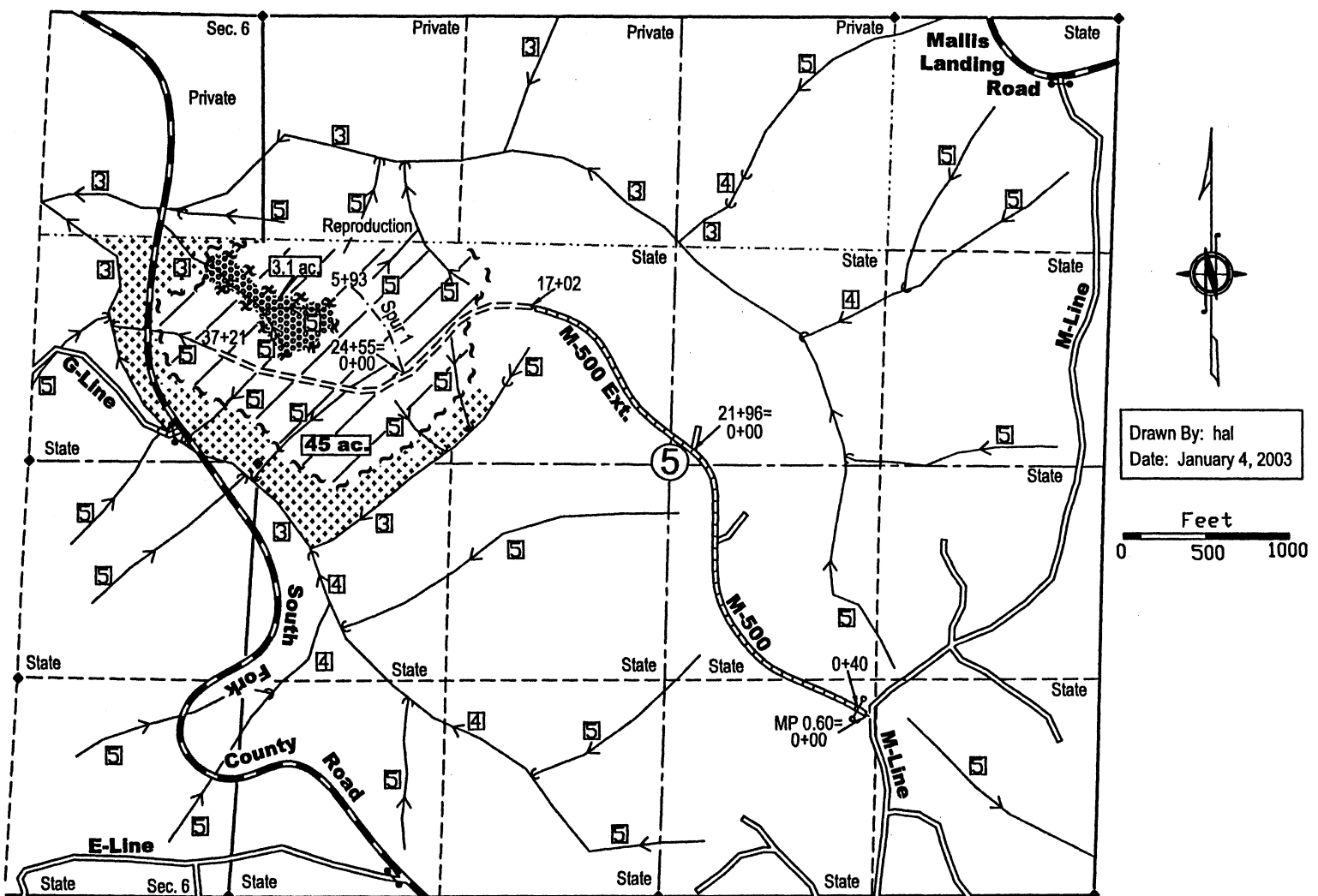
CONTRACT ADMINISTRATOR: Larry Leach

DATE: 02/01/2003

STAFF ENGINEER: Terry Orton

APPROVED BY: *[Signature]*

DRAWN & COMPILED BY: Alicia Compton



Drawn By: hal  
Date: January 4, 2003

Feet  
0 500 1000

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	Sale Area
	Timber Sale Boundary tags
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	Riparian Management Zone
	Gate-Existing
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	Private Property
	Gate-to be installed
	Required Road Construction
	Required Road Reconstruction
	Optional Road Construction

## SECTION 0 – SCOPE OF PROJECT

This project includes but is not limited to construction and optional construction including:

- clearing;
- grubbing;
- right-of-way debris disposal;
- excavation and/or embankment to subgrade;
- landing construction;
- acquisition and installation of drainage structures;
- acquisition, manufacture, and application of rock;
- grass seeding.

This project also includes but is not limited to reconstruction including:

- acquisition and installation of additional drainage structures;
- grading and shaping existing road surface and turnouts;
- compaction of road surface;
- acquisition, manufacture, and application of rock.

## SECTION 1 - GENERAL CLAUSES

### 1.1-1

Clauses in this plan apply to all construction or reconstruction including landings unless otherwise noted.

### 1.1-2

Construction or reconstruction of the following roads is required. All roads shall be constructed or reconstructed on the State's location and in accordance with this Road Plan.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
M-500	0+00 to 21+96	Reconstruction
M-500 Ext.	0+00 to 17+02	Reconstruction
M-500 Ext.	17+02 to 37+21	Construction

### 1.1-3

Construction of the following road is not required. Roads used by the Purchaser shall be constructed on the State's location and in accordance with this Road Plan.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
Spur 1	0+00 to 5+93	Construction

### 1.1-4

If the Purchaser desires a road location or design change, a revised Road Plan shall be submitted to the State for consideration.

### 1.1-5

On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to: solid subsurface rock, subsurface springs, saturated ground, and unstable soil.

### 1.1-7

Hauling of forest products or equipment may require a county road hauling permit. Purchaser is responsible for obtaining a permit, and any costs associated with extra maintenance or repair levied by a county.

### 1.2-1

The construction or reconstruction of any roads specified herein shall not be permitted between September 30 and May 1 unless authority to do so is granted, in writing, by the Contract Administrator.

### 1.2-2

Purchaser shall not use roads constructed or reconstructed under this Road Plan for hauling, other than timber cut on the right-of-way, without written approval from the Contract Administrator.

1.2.1-1

Pioneering shall not extend past construction that will be completed during the current construction season. Drainage shall be provided on all uncompleted construction as approved, in writing, by the Contract Administrator.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches, and culvert installations shall be completed and are subject to written approval by the Contract Administrator prior to rock application.

1.3-1A

Hauling shall be suspended when wheel track rutting exceeds 4 inches unless Purchaser elects to correct the situation at his/her own expense. Corrective measures and continued operations are subject to written approval by the Contract Administrator.

1.4-3

Reference points (R.P.'s) that are moved or damaged at any time during construction shall be reset in their original locations by the Purchaser. Excavation and embankment shall not proceed on road segments controlled by said R.P.'s until all moved or damaged R.P.'s are reset.

1.5-1

Maintenance on roads listed in Contract Clauses C-50 (Purchaser Road Maintenance and Repair) and C-60 (Designated Road Maintainer) shall be performed in accordance with Forest Access Road Maintenance Specifications.

## SECTION 2 - CLEARING

2.1-1

Fell all vegetative material larger than 2 inches DBH or over 5 feet high between the marked right-of-way boundaries or if not marked in the field, between clearing limits specified on TYPICAL SECTION SHEET.

## SECTION 3 - GRUBBING

3-1

All stumps shall be removed that fall between grubbing limits shown on the TYPICAL SECTION SHEET. Those outside the grubbing limits but with undercut roots shall also be removed.

3-2

Grubbing limits are defined as the entire area between the external limits shown on the TYPICAL SECTION SHEET.

## SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

4.1-1

Right-of-way debris is defined as all nonmerchantable vegetative material larger than one cubic foot in volume within the grubbing limits.

4.1-2

All right-of-way debris disposal shall be completed prior to the application of rock

4.2.3-3

Right-of-way debris shall not be placed against standing timber.

4.2.3-4

Right-of-way debris shall be scattered outside the grubbing limits.

SECTION 5 - EXCAVATION

5.1-1  
Roads shall be constructed or reconstructed in accordance with dimensions shown on the TYPICAL SECTION SHEET.

5.1-3  
Road grade and alignment shall conform to the State's marked location. Grade and alignment shall have smooth continuity without abrupt changes in direction. Maximum grades are: 18 percent favorable and 12 percent adverse. Minimum radius curve is 60 feet.

5.1-4  
Minimum extra widening on the inside of curves shall be:

5 feet extra	80 to 100 foot radius curve
7 feet extra	60 to 80 foot radius curve

5.1-5  
Curve widening, where required, shall be added to the inside of curves.

5.1-7  
Roads shall be constructed or reconstructed to the dimensions shown on the TYPICAL SECTION SHEET, within the tolerance listed below. Tolerance classes for each road are listed on the TYPICAL SECTION SHEET.

<u>Tolerance Class</u>	<u>A</u>	<u>B</u>	<u>C</u>
Road Width (feet)	+1.5	+1.5	+2.0
Subgrade elevation (feet +/-)	0.5	1.0	2.0
Centerline alignment (feet lt./rt.)	1.0	1.5	3.0

5.1-8  
Excavation slopes shall be constructed no steeper than shown on the following table:

<u>Material Type</u>	<u>Excavation Slope Ratio</u>
Common Earth (on side slopes of 55%).....	1:1
Common Earth (55% to 70% sideslopes).....	¾:1
Common Earth (on slopes over 70%) .....	½:1
Fractured or loose rock.....	½:1
Hardpan or solid rock .....	¼:1

5.1-9  
Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-10  
Embankments shall be widened as follows:

<u>Height at Centerline</u>	<u>Subgrade Widening</u>
Less than 6 feet	2 feet
6 feet or over	4 feet

5.1-11  
Embankment slopes shall be constructed no steeper than shown on the following table:

<u>Material Type</u>	<u>Excavation Slope Ratio</u>
Common Earth and Rounded Gravel .....	1½:1
Angular Rock .....	1¼:1
Sandy Soils.....	2:1

5.1-12  
Organic material shall be excluded from embankment.

5.1-15B

Waste material may be deposited adjacent to the road prism on side slopes up to 45 percent if the waste material is compacted and more than 100 feet away from live streams. On side slopes between 45 and 55 percent, all excavation not needed for embankment shall be end hauled or pushed to designated embankment sites. On side slopes of 55 percent or more, all excavation shall be end hauled or pushed to designated embankment sites. All waste embankments shall be compacted in layers not exceeding 2 feet.

5.1-15C

When constructing landings, waste material and embankment shall not be placed on side slopes steeper than 45%.

5.1-21

Waste material shall not be deposited within 50 feet of a cross drain culvert installation.

5.1-23

Turnout locations noted on this plan are approximate. Locations shall be adjusted to fit with final subgrade alignment and sight distances. Location shall be subject to written approval of the Contract Administrator.

5.1-25

Turnarounds shall be no larger than 30 feet long and 30 feet wide. Location shall be subject to written approval of the Contract Administrator.

5.2-1

Road pioneering operations shall not undercut the final cut slope, deposit excavated material outside the grubbing limits, or restrict drainage.

5.3-1

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts.

5.4-1

Silt-bearing runoff shall not be permitted to go into streams.

5.4-2

Accomplish sediment removal through silt traps, silt fences, settling ponds, or other methods as approved, in writing, by the Contract Administrator.

5.4-3A

On the following roads, Purchaser shall furnish and evenly spread the seed mixture listed below on all exposed soil inside the grubbing limits at a rate of 40 pounds per acre. The date of application is subject to approval by the Contract Administrator.

<u>Mixture Percent by Weight</u>	<u>Minimum Percent Germination</u>
50% Fescue, Red	90% Germination
25% Ryegrass, Perennial	90% Germination
15% Bentgrass	85% Germination
10% Clover, White and White Dutch (inoculated)	90% Germination

Weed seed shall not exceed 0.5% by weight.

Seed shall be furnished in standard containers on which the following shall be shown:

1. Common name of seed
2. Net weight
3. Percent of purity
4. Percentage of germination
5. Percentage of weed seed and inert material

5.4-3A continued

Required seed not spread by the termination of this contract shall become property of the State. The amount owed to the State shall be as follows, less the amount spread.

<u>Road</u>	<u>Stations</u>	Seed Quantity <u>(lbs)</u>
M-500 Ext.	17+02 to 37+21	85
Spur 1	0+00 to 5+93	25

5.5-4

Constructed or reconstructed subgrades shall be compacted full width except ditch prior to rock application. Compaction shall be by a smooth-drum vibratory roller weighing at least 14,000 pounds. Four complete passes shall be made at a maximum operating speed of 3 mph.

5.5-5

Finished subgrade shall be crowned or outsloped as shown on the TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

SECTION 6 - DRAINAGE

6.1-1

On the following road, road surfaces shall be outsloped at 4 inches in 10 feet.

<u>Road</u>	<u>Stations</u>
M-500 Ext.	0+00 to 17+02

6.2.1-1B

Purchaser shall furnish, install, and maintain corrugated polyethylene pipe (AASHTO specification No. M-294 Type S) as designated on the CULVERT LIST. Culvert and flume lengths shall be varied to fit as-built conditions subject to written approval by the Contract Administrator.

6.2.1-2

Manufacturer's approved connectors shall be used for corrugated polyethylene pipe.

6.2.1-5

On required roads: culverts, downspouts, flumes, bands, and gaskets as listed on the CULVERT LIST which are not installed shall become property of the State.

6.2.2.1-1A

Culvert, downspout, flume, and energy dissipator installation shall be in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL and the Corrugated Polyethylene Pipe Association "Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings."

6.2.2.3-1

Cross drains and surface culverts on road grades in excess of 3% shall be skewed at least 30 degrees from perpendicular to the road centerline , except that cross drain culverts at the low points of dips in roads shall not be skewed.

6.2.2.3-2

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3% nor more than 10%.

6.2.2.5-1

Drainage structure outfalls shall not terminate directly on unprotected soil that will erode. Downspouts, flumes, and energy dissipators shall be installed to prevent erosion.

6.3-1

Ditches shall be constructed concurrently with construction of the subgrade. Ditches shall drain to culverts, ditchouts, and natural drainages.

- 6.4-1
- Catch basins shall be constructed to resist erosion in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL. Minimum dimensions: two feet wide and four feet long with backslopes consistent with Clause 5.1-8: Excavation Slopes.
- 6.5-1
- Headwalls shall be constructed in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts.

SECTION 7 - ROCK

- 7.1-1
- Rock for construction and/or reconstruction under this contract may be obtained from a source on State land as listed below at no charge to the Purchaser. Development and use shall be in accordance with a written "Development Plan" prepared by the State. A copy of the written plan is available upon request from the Central Region office. Upon completion of operations, the rock source shall be left in the condition specified in said plan, subject to approval by the Contract Administrator. Use of material from any other source must have prior written approval from the Contract Administrator. If other operators are using or desire to use this rock source, a joint operating plan shall be developed. All parties shall follow this plan.

<u>Source</u>	<u>Location</u>
B-1321 Quarry	Sec. 30, T13N, R08W, W.M.

- 7.2.1-4
- Rock shall meet the following specifications for gradation and quality when placed in hauling vehicles. The exact point of evaluation for conformance to specifications will be determined by the Contract Administrator.

- 7.2.1.1-6B
- 3 INCH MINUS CRUSHED ROCK

% passing 3" square sieve .....	100%
% passing 2" square sieve .....	65 - 95%
% passing ¾" square sieve.....	28 - 70%
% passing #4 square sieve.....	10 - 35%
% passing U.S. #200 sieve .....	0 - 10%

All percentages are by weight.  
The portion of ballast retained on ¼ inch sieve shall not contain more than 0.1 percent vegetative debris or trash.

- 7.2.1.1-7B
- 8 INCH PLUS ROCK

% equal to, or larger in one dimension than the specified size .....	100%
% passing U.S. #40 sieve .....	16% Max
% passing U.S. #200 sieve .....	5% Max

All percentages are by weight.  
The portion of ballast retained on ¼ inch sieve shall not contain more than 0.1 percent vegetative debris or trash.

- 7.2.1.1-9
- Landing rock shall be no coarser than 6 INCH MINUS.

- 7.2.3-1
- Measurement of the rock shall be on a cubic yard truck measure basis. Each truck box shall be measured by the Contract Administrator prior to rock hauling. The Contract Administrator shall periodically require that a load be flattened off and its volume calculated. An average of such volumes for each truck shall be used to tally the volume to be hauled. The Purchaser shall provide and maintain load tally sheets for each truck and shall give them to the Contract Administrator upon request.

7.4.2-1

Apply at least the minimum rock quantity as shown on ROCK LIST. Rock shall meet the specifications on the ROCK LIST.

7.4.2-7

Turnarounds, turnouts, and curve widening shall have rock applied to the same depth and specifications as the traveled way.

7.4.2-8

Each lift of rock shall be crowned or outsloped as shown on TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

7.4.3-1

Rock shall be mixed, compacted, and graded in sections not to exceed ½ mile in length. Water shall be added in quantities to facilitate compaction. If directed by the Contract Administrator, a minimum of 6 gallons of water per cubic yard of rock shall be applied.

7.4.3-2

Rock shall be spread and compacted full width in lifts each not to exceed 8 inches uncompacted depth. Compaction shall be by smooth drum vibratory roller weighing at least 14,000 pounds. Four complete passes at a maximum speed of 3 mph shall be made on each lift.

## SECTION 8 - STRUCTURES

8.4-1A

On the following road, a gate will be supplied by the State and is available at the Cedar Creek Correction Facility located in Section 11, Township 16 North, Range 04 West, W.M. Purchaser shall transport the gate to the installation site and install the gate in the same location as the existing gate posts. Each post of the gate shall be anchored by 2½ cubic yards of concrete. The existing posts shall be disposed of off of State land.

Road  
M-500

Stations  
0+40

## SECTION 9 - ROAD AND LANDING DEACTIVATION

9.2-1

Purchaser shall reduce or relocate landing debris, in a manner approved, in writing, by the Contract Administrator, to avoid landing failures and potential debris slides.

9.2-2

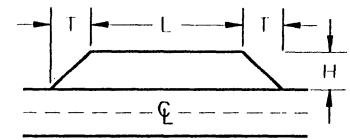
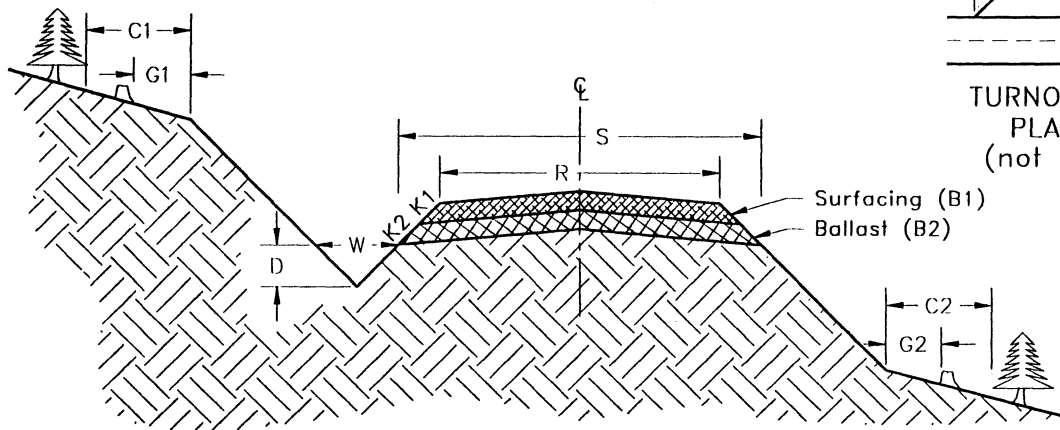
Purchaser shall provide for drainage of the landing surface as approved, in writing, by the Contract Administrator.

9.2-3

Landing embankments shall be sloped to original construction specifications.

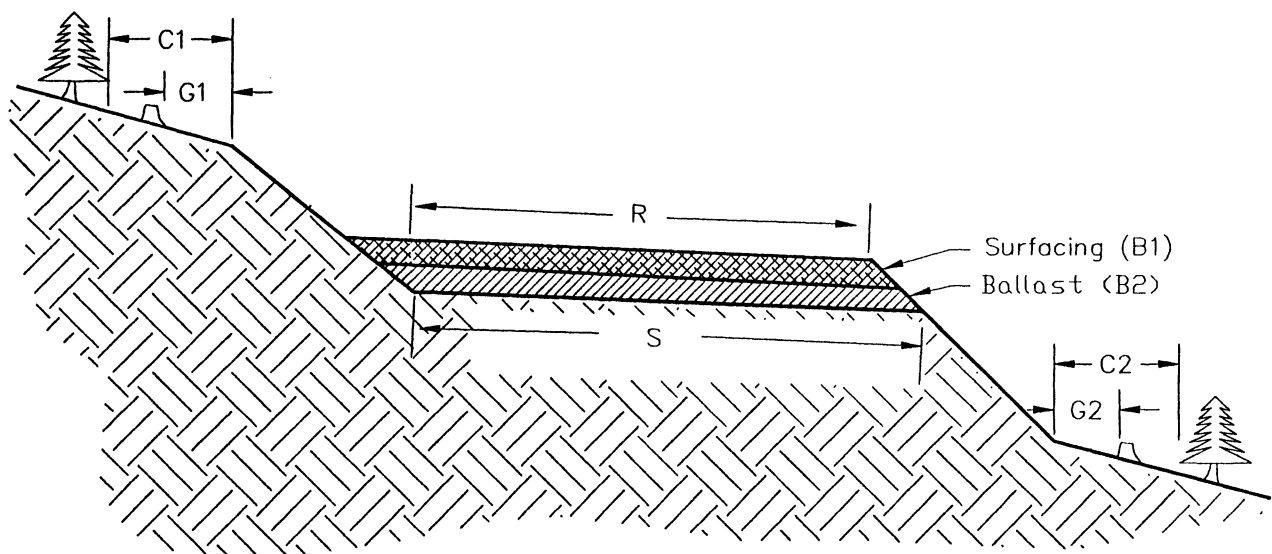


ROAD CROSS-SECTION  
(not to scale)



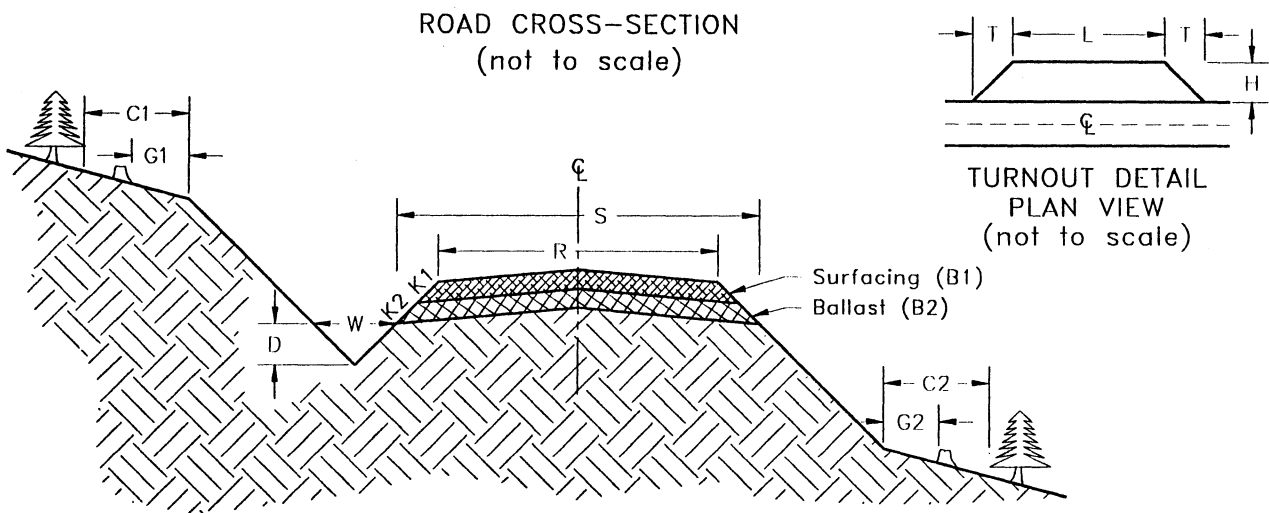
TURNOUT DETAIL  
PLAN VIEW  
(not to scale)

OUTSLOPED  
ROAD CROSS-SECTION  
(not to scale)



Road Number	From Station	To Station	Tolerance Class	Subgrade Width	Road Width	Ditch Width	Ditch Depth	Crown in. @ CL	Grubbing Limits		Clearing Limits	
				S	R	W	D		G1	G2	C1	C2
M-500	0+00	21+96	C	14'	12'	-	-	3"	-	-	-	-
M-500 Ext.	0+00	17+02	A	14'	10'	No ditch - Outslope			-	-	-	-
	17+02	37+21	C	13'	10'	2'	1'	3"	5'	5'	10'	10'
Spur 1	0+00	5+93	C	13'	10'	2'	1'	3"	5'	5'	10'	10'

ROCK LIST



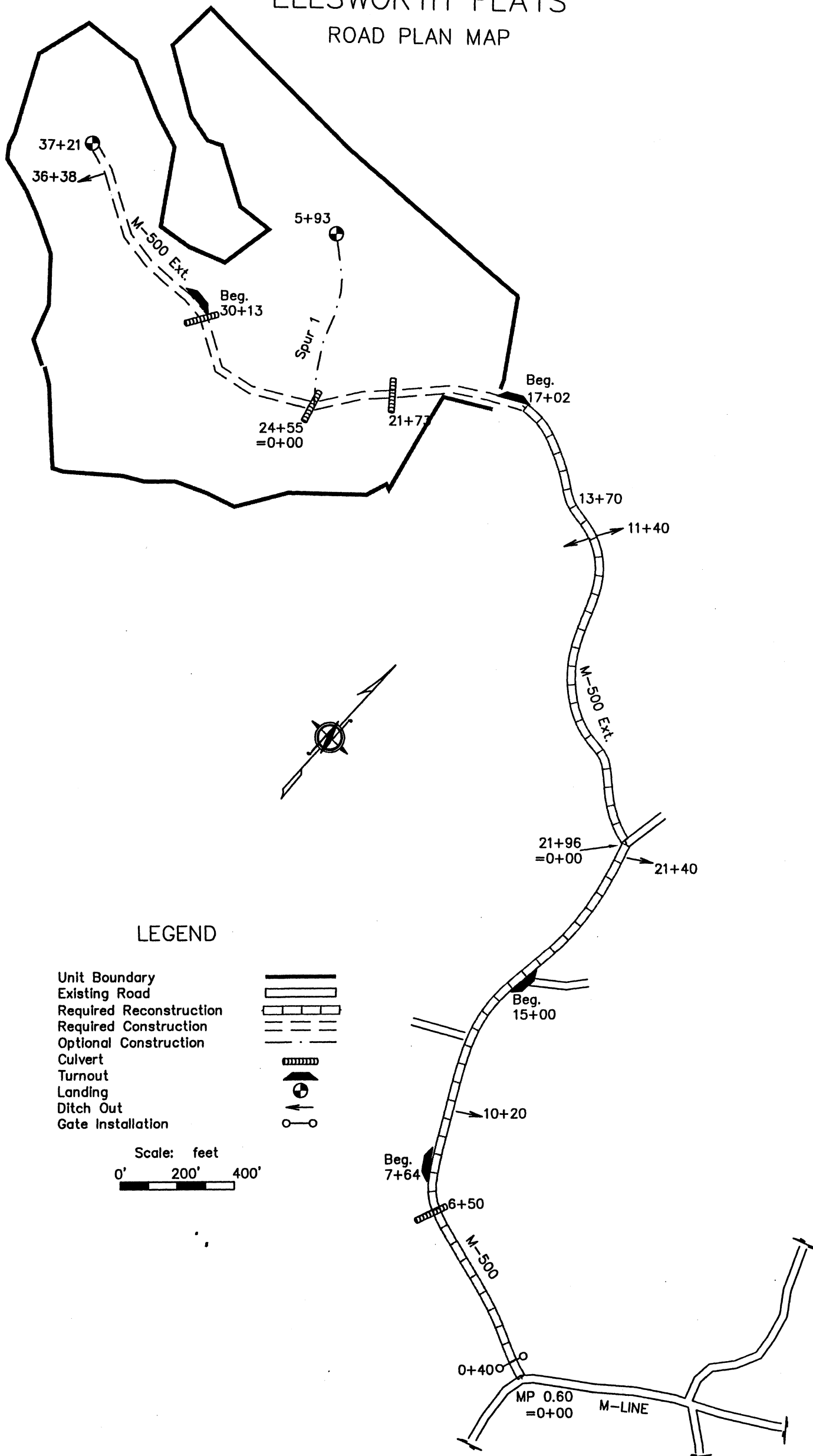
BALLAST

Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Subtotal	Rock Source	Turnout		
									Length	Width	Taper
			K2	B2					L	H	T
M-500	0+00	21+96	1 ½:1	6"	30	21.96	659	B-1321 Quarry	50'	10'	50'
	Turnouts (2)		1 ½:1	15"	69	2.00	138				
	Culvert						20				
M-500 Ext.	0+00	17+02	1 ½:1	15"	69	17.02	1,174		50'	10'	50'
	17+02	37+21	1 ½:1	15"	69	20.19	1,393				
	Turnouts (2)		1 ½:1	15"	69	2.00	138				
	Landing (1)		1 ½:1				50				
Spur 1	0+00	5+93	1 ½:1	15"	69	5.93	409				
	Landing (1)		1 ½:1				50				
					8 INCH PLUS						
M-500	Culvert (1)						1				
M-500 Ext.	Culverts (3)						3				

3 INCH MINUS CRUSHED TOTAL 4,031 Cubic Yards  
8 INCH PLUS TOTAL 4 Cubic Yards

# ELLSWORTH FLATS

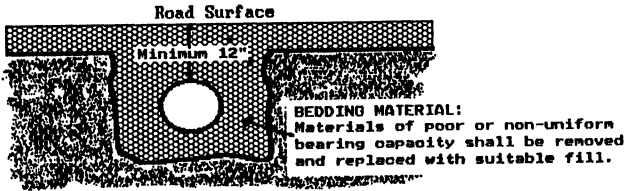
## ROAD PLAN MAP



CULVERT LIST

Road Number	Location	Culvert		Length (ft)			Riprap (C.Y.)			Backfill Material	Quantity (c.y.)	Const. Staked	Remarks
		Dia.	Gauge	Culvert	Downspt	Flume	Inlet	Outlet	Type				
			If										
M-500	6+50	18"	Steel										
M-500 Ext.	21+73	18"	CPP	34	-	-	0.5	0.5	8"	3"	20		
	24+55	18"	CPP	32	-	-	0.5	0.5	8"	NT			
	30+13	18"	CPP	36	-	-	0.5	0.5	8"	NT			
		18"	CPP	30	-	-	0.5	0.5	8"	NT			

CULVERT BACKFILL AND BASE PREPARATION  
(For culverts less than 36")

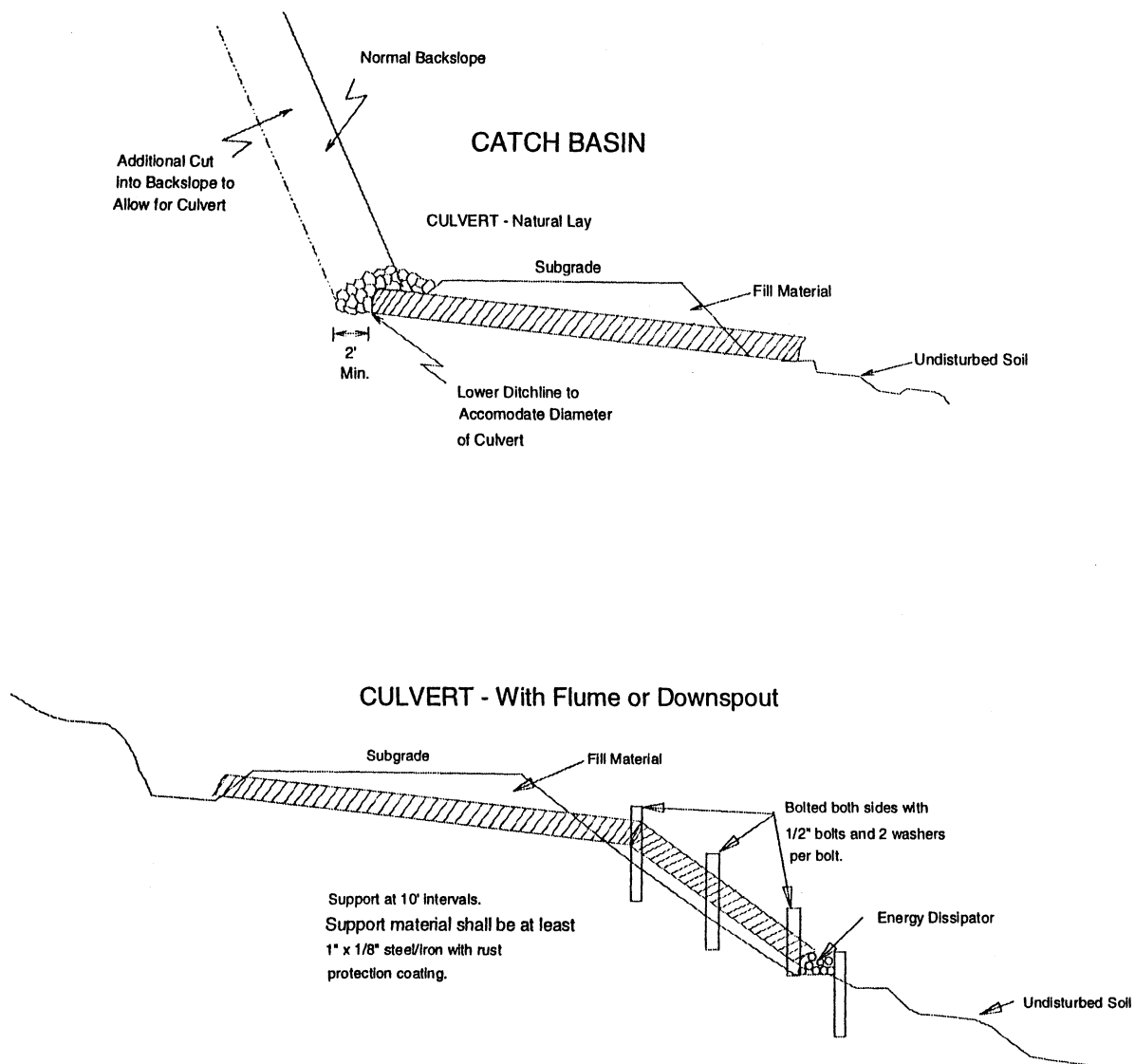


Key:

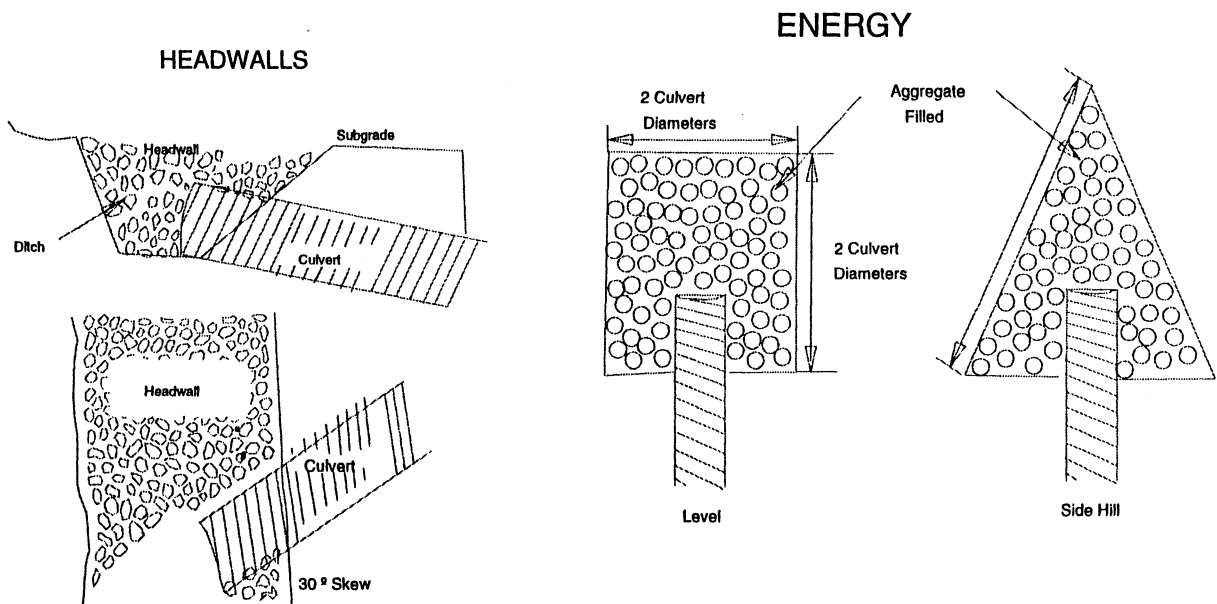
- 8" - 8 Inch Plus Rock
- 3" - 3 Inch Minus Crushed Rock
- NT - Native (bank run)
- SL - Select Fill
- HL - Heavy Loose Riprap
- LL - Light Loose Riprap
- Flume - Half round pipe
- Downspout - Full round pipe
- CPP - Corrugated polyethylene pipe

CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 1 of 2)



Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.



Headwalls to be constructed of material that will resist erosion.

Dissipator Specifications:  
Depth: 1 culvert diameter  
Aggregate: as specified in the CULVERT LIST.

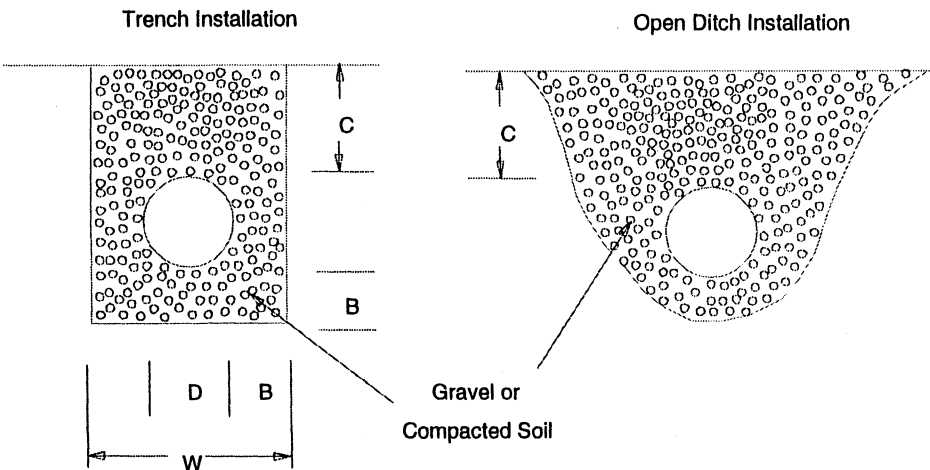
CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 2 of 2)

POLYETHYLENE PIPE INSTALLATION

INSTALLATION REQUIREMENTS:

- 1. Crushed stone, gravel, or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4" diameter, whichever is smaller.
- 2. The corrugated pipe shall be laid on grade, on a layer of bedding material as shown for the two types of installations. If native soil is used as the bedding and backfill material, it shall be well compacted in six inch layers under the haunches, around the sides and above the pipe to the recommended minimum height of cover.
- 3. Either crushed aggregate or flexible (asphalt) pavement may be laid as part of the minimum cover requirements.
- 4. Site conditions and availability of bedding materials often dictate the type of installation method used.
- 5. The load bearing capability of flexible conduits is dependent on the type of backfill material used and the degree of compaction achieved. Crushed stone and gravel backfill materials typically reach a compaction level of 90-95% AASHTO standard density without compaction. When native soils are used as backfill material, a compaction level of 85% is required. This minimum compaction can be achieved by either hand or mechanical tamping.



MINIMUM DIMENSIONS  
Trench or Open Ditch Installation

Nominal Diameter	Minimum Thickness	Minimum Cover	Min. Trench Width
<i>D</i>	<i>B</i>	<i>C</i>	<i>W</i>
18"	6"	12"	36"
24"	6"	12"	42"
30"	6"	12"	48"
36"	6"	12"	54"

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

FOREST ACCESS ROAD  
MAINTENANCE SPECIFICATIONS

1. CONSTRUCTION AND RECONSTRUCTION (Prior to acceptance to the contract or acceptance on a timber sale).
  - A. Cuts and Fills
    1. Maintain slope lines as constructed. Remove slides from the ditches and roadway. Replace fills to 1½:1 slopes with selected material or as directed. Remove overhanging material from the cut slopes.
    2. Material from slides or other sources requiring removal shall not be deposited in streams or at locations where it will erode into streams or water courses.
    3. Undesirable slide materials and debris shall not be mixed into the surface material.
  - B. Surface
    1. Grade and shape the road surface, turnouts, and shoulders to the original crown, inslope or outslope as directed to provide suitable traveled surface and surface water runoff in an even, unconcentrated manner.
    2. Blading must not undercut the backslope at the bottom of the ditchline or cut geotextile at centerline.
    3. Watering may be required to control dust and to retain fine surface rock.
    4. Desirable surface material shall not be bladed off the roadway.
    5. Replace surface material lost or worn away.
    6. Remove berms except as directed by the State.
    7. Barrel spread soft spots to prevent degradation of geotextile.
  - C. Drainage
    1. Keep ditches and drainage channels at outlets and inlets of culverts clear of obstructions and functioning as intended.
    2. Inspect and clean culverts at least monthly, with additional inspections during storms and periods of high runoff. This must be done even during periods of inactivity.
    3. Add stable material at the outlet end of the culvert as needed to stabilize the stream bed.
    4. Headwalls: maintain to the road shoulder level with material that will resist erosion.
    5. Keep silt bearing surface runoff from getting into live streams.
  - D. Structures

Repair bridges, culverts, cattleguards, fences, and other road structures to the condition required by the construction specifications.
  - E. Termination of Use or End of Season

Do maintenance work to minimize damage from the elements such as blading to insure correct runoff, ditch, and culvert cleaning and water bars.
  - F. Debris

Remove fallen timber, limbs, and stumps from the slopes or roadway.

